

What is claimed is:

1. A process for the production of chlorodifluoroacetyl fluoride which comprises reacting a solvent solution of chlorotrifluoroethylene with oxygen in a reactor to form a product which comprises chlorodifluoroacetyl fluoride.
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2. The process of claim 1 wherein the reacting is conducted in a continuous mode.
3. The process of claim 1 wherein the reacting is conducted in a batch mode.
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4. The process of claim 1 further comprising the subsequent step of removing chlorodifluoroacetyl fluoride from the product.
5. The process of claim 1 further comprising the subsequent step of removing residual solvent from the product, forming a mixture of the residual solvent with additional chlorotrifluoroethylene and recycling the mixture to the reactor.
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6. The process of claim 1 wherein the solvent is selected from the group consisting of halogenated butanes, halogenated hexanes, dimethyl cyclobutanes, octadecafluorodecahydronaphthalene, and combinations thereof.
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7. The process of claim 1 wherein the solvent is selected from the group consisting of $C_4F_xCl_y$ wherein $x = 1$ to 10 and $y = 10 - x$; $C_6F_xCl_y$ wherein $x = 1$ to 14 and $y = 14 - x$; $C_6F_xCl_y$ wherein $x = 1$ to 12 and $y = 12 - x$; and combinations thereof.
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8. The process of claim 1 wherein the chlorotrifluoroethylene concentration in the solvent ranges from about 1% to about 30% by weight.

5 9. The process of claim 1 wherein the solvent solution is fed into the reactor at a rate which ranges from about 0.1 to about 3 times the reactor volume per hour.

10 10. The process of claim 1 wherein if the reactor has vapor space, the amount of chlorotrifluoroethylene in the vapor space is maintained at about less than 3 wt.%.

15 11. The process of claim 1 wherein the reaction is conducted at a temperature in the range of from about 20°C to about 200°C.

12. The process of claim 1 wherein the oxygen partial pressure is maintained in the range of from about 10 psia about to 300 psia.

15 13. The process of claim 1 wherein the ratio of oxygen to chlorotrifluoroethylene ranges from about 0.01 to about 0.55 by weight.

20 14. A continuous process for the production of chlorodifluoroacetyl fluoride which comprises reacting a solvent solution of chlorotrifluoroethylene with gaseous oxygen with simultaneous agitation in a reactor to form a product which comprises chlorodifluoroacetyl fluoride.

25 15. The process of claim 14 wherein the reaction is conducted by continually feeding the solvent solution of chlorotrifluoroethylene into the reactor, wherein the reactor is pre-pressurized with oxygen.

16. The process of claim 14 further comprising the subsequent step of removing chlorodifluoroacetyl fluoride from the product.
17. The process of claim 14 further comprising the subsequent step of removing residual solvent from the product, forming a mixture of the residual solvent with additional chlorotrifluoroethylene and recycling the mixture to the reactor.
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18. The process of claim 14 wherein the solvent is selected from the group consisting of halogenated butanes, halogenated hexanes, dimethyl cyclobutanes, octadecafluorodecahydronaphthalene, and combinations thereof.
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19. The process of claim 14 wherein the solvent is selected from the group consisting of $C_4F_xCl_y$ wherein $x = 1$ to 10 and $y = 10 - x$; $C_6F_xCl_y$ wherein $x = 1$ to 14 and $y = 14 - x$; $C_6F_xCl_y$ wherein $x = 1$ to 12 and $y = 12 - x$; and combinations thereof.
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20. The process of claim 14 wherein the chlorotrifluoroethylene concentration in the solvent ranges from about 1% to about 30% by weight.
21. The process of claim 14 wherein the solvent solution is fed into the reactor at a rate which ranges from about 0.1 to about 3 times the reactor volume per hour.
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22. The process of claim 14 wherein if the reactor has vapor space, the amount of chlorotrifluoroethylene in the vapor space is maintained at about less than 3 wt%.
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23. The process of claim 14 wherein the reaction is conducted at a temperature in the range of from about $20^\circ C$ to about $200^\circ C$.

24. The process of claim 14 wherein the oxygen partial pressure is maintained in the range of from about 10 psia about to 300 psia.

5 25. The process of claim 14 wherein the ratio of oxygen to chlorotrifluoroethylene ranges from about 0.01 to about 0.55 by weight.

10 26. A continuous process for the production of chlorodifluoroacetyl fluoride which comprises reacting a solvent solution of chlorotrifluoroethylene with gaseous oxygen with simultaneous agitation in a reactor to form a product which comprises chlorodifluoroacetyl fluoride; wherein the reaction is conducted by continually feeding the solvent solution of chlorotrifluoroethylene into the reactor, wherein the reactor is pre-pressurized with oxygen; and then subsequently removing chlorodifluoroacetyl fluoride from the product; wherein the solvent is selected from the group consisting of halogenated butanes, halogenated hexanes, dimethyl cyclobutanes, octadecafluorodecahydronaphthalene, and combinations thereof; wherein the chlorotrifluoroethylene concentration in the solvent ranges from about 1% to 30% by weight; wherein the solvent solution is fed into the reactor at a rate which ranges from about 0.1 to about 3 times the reactor volume per hour; wherein if the reactor has vapor space, the amount of chlorotrifluoroethylene in the vapor space is maintained at about less than 3 wt.%; wherein the reacting is conducted at a temperature in the range of from about 20°C to about 200°C; wherein the oxygen partial pressure is maintained in the range of from about 10 psia to about 300 psia; wherein the ratio of oxygen to chlorotrifluoroethylene ranges from about 0.01 to about 0.55 by weight.

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27. The process of claim 26 further comprising the subsequent step of removing residual solvent from the product, forming a mixture of the residual solvent with additional chlorotrifluoroethylene and recycling the mixture to the reactor.

5 28. The process of claim 26 wherein the solvent is selected from the group consisting of $C_4F_xCl_y$ wherein $x = 1$ to 10 and $y = 10 - x$; $C_6F_xCl_y$ wherein $x = 1$ to 14 and $y = 14 - x$; $C_6F_xCl_y$ wherein $x = 1$ to 12 and $y = 12 - x$; and combinations thereof.

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